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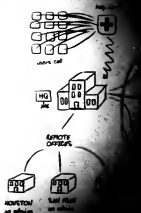
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STRATEGIES & TACTICS

HR Gets a Dose of Science

Human resources departments are using "human capital management" software to add efficiency, rigor and ROI to the art of workforce administration. The software automates tasks related to hiring, training, promoting and scheduling employees. It also helps with succession planning and workforce analysis. **PAGE 24**

20 Caught in the IT Pay Squeeze. While IT leaders are whipping out their checkbooks to court highly coveted job candidates, they're also trying desperately to keep salary costs down while finding ways to stop their top performers from moving to greener monetary pastures.

28 Silence Is Deadly. IT Mentor Robert Scott of Procter & Gamble says the culprit in 80% of project failures is crucial conversations that just don't happen.

30 Nobody's Perfect. The myth of the complete leader goesds some managers into a futile effort to be all things to all people. The result can be damaging to the manager and the organization, says MIT's

Deborah Ancona. She talks about how to make peace with your shortcomings and balance your organization.

32 Security Manager's Journal. A virus infection points up the dangers of making it all too easy for visitors to get onto the company network. Mathias Thurman finds.



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10 On the Mark: Mark Hall wanders around the Demo '07 conference and finds a disturbing trend facing IT and a few cool tools that might help mitigate its effects.

10 Don Tennant recounts a tale of a rogue corporate lawyer who demanded that Computerworld remove a story from its Web site because it was posted without a legal release from her company. The corporation later made nice, but there's still the worry that

the IT manager who was quoted could face repercussions.

10 Michael H. Huges heralds the return to prominence of the most pivotal person in the IT profession: the business analyst.

33 Paul Olsen muses about how unrealistic expectations of perfection can turn a good manager into a failure.

30 Frankie Spagnoli: Frank Huges knows all the reasons why IT isn't using USB security keys instead of easily hackable passwords. But those reasons aren't enough, he says.

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2007: A Good Year For Your Career

CAREERS: Columnist Katherine Springer Lee tells you which IT skills will be in highest demand — and earn the highest salaries.

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Really Cheap PC Protection

STORAGE: For under \$20, software from Code 42 allows you to back up your PC at home, to a friend's PC or to a remotely managed site.

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The Trouble With Vista

SOFTWARE: It isn't the features you can see in Vista or the lack thereof — it's the priority shift at Microsoft's core, says Computerworld.com's Scott Finnie.

Q www.computerworld.com/software

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From the Editor in Chief

THIS ISSUE marks our launch of "Strategies & Tactics," a revamped, redesigned and re-energized features section that aims to more accurately mirror the reality of

the challenges that confront you and the way you need to address them.

The reality is that your technology and management challenges are inseparable. Just as technology and business

issues are inextricably linked in your world, technology and management combine to define your mission as a business enabler. Consequently, we're doing away with our separate Technology and Management sections.

What isn't changing is our focus on coverage that enables you to understand what your peers are doing and how they're doing it. Under the stewardship of award-winning features editor Kathleen Melymuka, Strategies & Tactics will strengthen our quest to facilitate the sharing of experiences and the best practices that are so vital to your mission.

Let Kathy and me know what you think of it, and tell us how we can best mold it into exactly what you need it to be.

— DON TENNANT

AT DEADLINE

Shareholders File Lawsuit Against Dell

A group of Dell Inc. investors filed a lawsuit alleging that the company used illegal accounting methods to hide secret kickback payments that it received from Intel Corp. The suit charged that the payments ensured that Dell used only Intel processors in its PCs. Intel denied the charges. A Dell spokeswoman said the company would not comment on pending litigation. The lawsuit was filed shortly after Kevin Rollins resigned as Dell's CEO. Rollins was replaced by company founder and former CEO Michael Dell.

Governor Proposes Voting Paper Trail

Florida Gov. Charlie Crist announced plans to spend \$32.5 million to replace touch-screen e-voting machines used across the state with optical-scanning devices that print out paper records. The move follows a series of disputes over Florida vote counts in local and national elections in recent years.

CA Sales Pass \$1B, Profits Fall by \$7M

CA Inc. said revenue increased by 4% in its third fiscal quarter, rising to just over \$1 billion. But profits decreased by \$7 million.

CA BY THE NUMBERS

Q3 '07	\$50M
Q3 '06	\$57M

HP Contractor Won't Face Calif. Charges

A California judge has dismissed state charges against an independent contractor in connection with Hewlett-Packard Co.'s efforts to spy on its board members. The charges against Bryan Wagner were dropped because he pleaded guilty to similar federal charges on Jan. 12. Wagner was facing a state charge on charges related to his efforts to trace the source of boardroom leaks to the media.

Oracle Promises Easier Upgrade To E-Business Software Suite

Rolls out first major release in six years, hopes to avoid previous migration woes

BY MARC L. SONGINI
IN A COLUMN

FOR THE first time in six years, Oracle Corp. is shipping a new version of its flagship E-Business Suite applications, and company officials vowed last week that upgrading won't be as challenging as moving to the last release was.

During a launch event here, Oracle announced the availability of E-Business Suite 12, saying the new software is easier to use than its 11th predecessor and more tightly integrated with the company's Fusion Middleware technology and the various other business applications Oracle has acquired in recent years.

In addition, Oracle said Version 12 has been tested thoroughly in an attempt to avoid the upgrade headaches many users experienced with 11s, which had glitches that required extensive patching and testing when it was first released. John Wukely, senior vice president of applications

development at Oracle, called Version 12 "bulletproof" and said the company had focused on upgrading in a easy migration from 11s.

A Positive Sign

Jan Wagner, president of the independent Oracle Applications Users Group (OAUG), said Version 12 demonstrates Oracle's commitment to

The cost of upgrading makes us look closer to be sure there is payback.

DAVID RUDZINSKY,
ODI Hologic Inc.

continued investment in its enterprise applications, even as it moves forward with a plan to combine them into a best-of-breed product line. "It shows users have chosen an application with a future," he said.

Wagner is the London-based director of financial operations and internal review at NATO, which uses Oracle's 11th financial applications. Having seen previews of Version 12 before the launch, he noted that one of the enhancements is an improved reporting capability using Oracle's Java-based XMI Publisher software, which is part of the Fusion Middleware suite.

XMI Publisher enables non-technical users to create sheets on reports in Microsoft Word or Adobe Acrobat for easier collaboration with co-workers. NATO has strict financial reporting rules, and Wagner said the new reporting functions could make it easier to generate shared reports without the help of a database administrator.

David Rudzinsky, CEO at Hologic Inc., a Bedford, Mass.-based medical instruments maker, said he hopes the quality of the Version 12 software is as good as that of the 5.30 release of E-Business Suite 11s, which his company currently uses. He added that Hologic will put Version 12 through extensive testing before decid-



ing whether undertaking an upgrade would be worthwhile.

"The cost of upgrading makes us look closer to be sure there is payback," Rudzinsky said, adding that Hologic is happy with 11s \$500 and could wait and then upgrade directly to the best-of-breed Fusion Applications without investing in Version 12. He said he also wants to hear more about Oracle's plans for its Siebel CRM applications and how they fit into the application strategy.

Budner Klein, a member of the OMEG executive committee, said that Oracle has been touting an overall commitment to product quality and that he doesn't think there should be any fears about Version 12 being buggy.

OAUG members did have some concerns about pricing, said Khon, who is president and CEO of Oracle consulting firm Innova Technology LLC in Irvine, Calif. "But now Oracle has said there are no upgrade fees," he added. "It's just like another upgrade." ■

China Martens of the IDG News Service contributed to this story.

PeopleSoft, J.D. Edwards Applications Get Makeovers

NEW YORK

IN ADDITION TO E-Business Suite 12, Oracle last week announced upgrades of its PeopleSoft Enterprise, Siebel CRM, J.D. Edwards EnterpriseOne and J.D. Edwards World applications—all of which it has gained via acquisitions.

Perhaps most significant was the preview of World A11—the first major release of the green-screen software since 1998. Expected to ship sometime this year, World A11 includes four new modules and 1,297 enhancements in areas such as materials, distribution, manufacturing and human resources according to Oracle.

World, which runs on IBM's

AS/400 systems and its System i successors, had languished under original developer J.D. Edwards & Co. and was slated for obsolescence before PeopleSoft Inc. bought J.D. Edwards in 2003. PeopleSoft pledged to support the applications, and Oracle expanded on that commitment when it purchased PeopleSoft two years ago.

The new release has World backers celebrating, said Robert Lieberman, a board member of the Quest International Users Group, which is made up of all users of PeopleSoft Enterprise, J.D. Edwards EnterpriseOne and World. Several years ago, World was basically dead, said Lieberman, who is COO at New

Plan Excel Realty Trust Inc. in New York. Now, not only has the software survived, but it has been heavily revamped with a new Web-based user interface, he added.

Oracle President Charles Phillips said at a launch event here that the E-Business Suite and the company's other applications will continue to be enhanced indefinitely. And he reiterated that no customers will be forced off their existing applications after Oracle releases the Fusion Applications best-of-breed suite. Phillips said users will be able to migrate to Fusion, which is scheduled for an annual release next year, on their own timetables.

MARC L. SONGINI

AT DEADLINE

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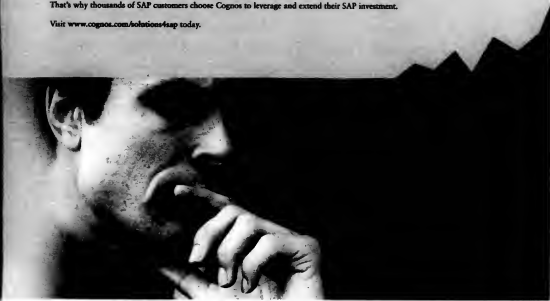
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Office 2007 Training Fears Are Overblown, Microsoft Exec Says

Caposella: New user interface 'far less of a concern' than IT managers think

BY CAROL SALIVA
NEW YORK

Many IT managers have voiced concerns that the dramatically different user interface in Microsoft Corp.'s Office 2007 software will force them to plan migrations more carefully than they have had to in the past, with increased end-user training. But during an interview with Computerworld at last week's Windows Vista and Office 2007 launch event, Chris Caposella, corporate vice president of the product management group in Microsoft's business division, insisted that companies need not have to devote "some big, sophisticated training plan" to roll out the new Office applications. Excerpts follow:

Q&A
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IT managers say they will have to do more strategic planning for their Office 2007 rollout because of extra training time that needs to be built in. How would you say to companies that are concerned about that? Well, we certainly didn't do this lightly. We've been working on how to do this as well as we could for the past three years. We started by unveiling the new user interface many, many months ago to make sure people understood there was a big change coming. And then we did dramatically more end-user testing than we've done on any other piece of software.... The feedback we're getting is that it's far less of a concern than people think it will be initially.

There are two data points that we talk about. No. 1 is, for your average Office user, we see that it takes them about

two days of working with the product before they say, "I'll never go back." For your power user — the people who know the ins and outs of Excel, maybe the finance team, or the legal team when it comes to Word — it takes them more like two weeks before they'll say, "Please don't ever take this away."

But that's not two weeks of no productivity. When they launch the product for the first time, we've designed that

very first Ribbon so that the vast majority of the common things are right there. It's literally easy to see: How do I change a font? How do I print a file? How do I open a file? How do I save a file?

For those who haven't seen Office 2007 yet, can you describe the Ribbon? The Ribbon takes the place of menus and tool bars. You used to have menus that dropped down and tool bars that stacked up on top of each other. Now, the Ribbon is one strip of icons and galleries that you can choose from to author your documents. The vast ma-

jority of people — something like 85% of our beta users — said they were going to be more productive with Office 2007 than [Office] 2003.

The other thing we set out to do was to not put the training burden on the shoulders of the IT staff. We wanted to build the training right into the product and connect that to the Web, where we have really rich training materials.... IT doesn't have to roll anything out. If you hit Help within Office, it gets access to that training material.

You don't think IT departments

need to build in any training, period? They can just rely on your Web site? Absolutely. The best thing for them to do is just take a set of users and do a pilot. Obviously, do it with a small enough group that IT is going to feel comfortable supporting it, and see what kind of support they need for the new user interface. I think people will be very surprised that it's far less jarring than you might think.

So the fears of IT pros about the need for more extensive training are unfounded? I think they're rational to be concerned, and planning is a good thing. But all the data we have shows us that it is something that is much, much simpler than you at first think when you hear that the user interface has changed. »

Microsoft Looks to Boost Project Software's Appeal

BY ERIC LAI

The most unusual member of Microsoft Corp.'s Office suite may be Project. Despite a claimed installed base of 20 million users worldwide, the project management software toils in the shadows — so much so that it wasn't included in any of Microsoft's eight official Office 2007 bundles.

But users and analysts said Microsoft has made some welcome changes to the technical upgrades in Project 2007, which went into general release last week along with the rest of Office 2007.

For example, the desktop version of Project 2007 adds task drivers and visual cell highlighting, both designed to make it easier for users to spot changes to project schedules and tasks, according to Irwin Rodriguez, Microsoft's business director for Project. The new release also lets users undo multiple changes to a schedule or plan, he said.

"Project 2002 and 2003 offered nothing substantial on the desktop," said Jack Dahlgren, an independent consultant based in Silicon Valley. "With Project 2007, there is finally a reason to upgrade."

Saibal Sen, director of test quality assurance at Genesis Microchip Inc., also applauded the new features but said his company has no plans to upgrade to Project 2007 at this point. "We're comfortable right now," Sen said.

Genesis, a chip design firm in Alviso, Calif., has used Project since 1997 to manage its global software projects and currently has about 150 people on top of the Microsoft software. Project "forced us to think about the structure of a plan, so we don't allocate too many resources or too little."

Performance Gains

Microsoft has also rebuilt Project Server in an attempt to improve its performance, make it friendlier to third-party developers and integrate it with Office 2007's collaboration features. When Project Server was introduced in 2002, its capabilities were so limited that it was a mere "toy," Dahlgren said. The 2003 update fixed some issues, but the software continued to run slowly.

With the new release, "Microsoft appears to have addressed Project Server's

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JACK DAHLGREN, INDEPENDENT CONSULTANT

performance issues, though the proof will be when large deployments emerge," said IDC analyst Melinda Ballou.

Project Server 2007 also includes a new .Net application programming interface that provides full Web services connectivity for developers, who can then more easily create third-party applications on top of the Microsoft software, said Gary Chetetz, CEO of MSP/ProjectExperts, a New York-based consulting firm.

Microsoft also released the new Project Portfolio Server 2007 application, based on technology it acquired early last year. That product is designed to compete against higher-end offerings from Hewlett-Packard Co., CA Inc. and other vendors, Ballou said.

Mercedes-Benz USA has used Project and Project Ser-

er 2003 to help it accelerate the introduction of new cars in the U.S., said Simon Huang, a technology planning support specialist at the Montvale, N.J.-based company. For example, the automaker has been able to double to 88% the average percentage of spare parts available at its dealers by the time a new model is launched. Project has "helped us make sure the cagers arrive at the zoo before the animals," Huang said.

Project has also helped the company's 200 users centralize data in a single repository instead of keeping key information in Excel files on their PCs or in handwritten notes. But Huang said that although he is impressed by Project 2007's new features, his company has yet to start testing the software and currently has no upgrade plans. »

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BRIEFS

**Symantec to Acquire
Altiris for \$830M**

Symantec Corp. plans to acquire Altiris Inc., a maker of asset management software for mobile devices and other hardware, in a stock deal valued at \$830 million. Symantec will use the Altiris technology in its compliance, backup and security endpoint products. The deal is expected to close in the second quarter of this calendar year.

**Vermont Agency
Warns of Breach**

The Vermont Agency of Human Services has started sending letters to about 70,000 residents warning them of a computer compromise that may have exposed their Social Security numbers and other personal data. The breach, discovered Dec. 8, occurred in a computer running an application used for collecting delinquent child-support payments from noncustodial parents in the state. The state said that the stolen data was not encrypted.

**IBM Agrees to Buy
Data Mobility Firm**

IBM has agreed to buy Softtek Storage Solutions Corp. for an undisclosed sum. The deal is expected to close at the end of March. IBM plans to use Softtek's data mobility technology to build storage systems for customers of its Global Technology Services unit. IBM and Softtek have been partners for more than 10 years. Softtek is also a partner of Hewlett-Packard Co.

**Altira CIO Named
President of SIM**

Jim Noble, group vice president and CIO at Altira Group Inc., has been named president of the Society for Information Management. Noble succeeds Stephen Picchetti, vice president and CIO at Penske Corp., as head of the Chicago-based professional organization for IT executives. Picchetti will remain on SIM's board as the immediate past president and head of the association's SIM Foundation.

ON THE MARK

**The End Users
Will Be Driving ...**

... innovation in IT shops. You've long had to cater to end-user needs, whether it be creating custom reports with mainframe data or giving users the ability to do it themselves on desktop PCs. Well, hang on. It's about to get worse — um, better. That is, the pressure being put on IT to make user experiences better on internal systems will become even worse. Chris Shipley, executive producer of the Demo '07 conference held last week in Palm Desert, Calif., says it's a no-brainer to see that technology has created "the empowered individual" in the consumer market through an array of always-on Web applications and services that can be personalized. But, she adds, "I also see it influencing all aspects of enterprise computing."

Bob Brewin, chief technology officer for software at Sun Microsystems Inc., agrees that IT is already shifting to accommodate the personalized world of end users. But he warns CIOs not to go overboard in deploying "loosey-goosey Web front ends" without a rock-



solid identity management system or rigorous reliability tests. "Applications for front ends are being created over the weekend with APIs not designed for reliability and security," Brewin says. That means you'll increasingly need to understand not just how to deliver strategic and tactical business tools that match the predictions of individual users, but you'll also need to do so in ways that are secure and reliable. See? It is getting worse. Um, better.

**Do customized
data integration ...**

... without any heavy lifting. Despite the availability of everything from middleware to XML, data integration is still a time-consuming effort for IT. As a result, much of it is done

by end users on an ad hoc basis. Market research firm IDC estimates that having end users who cut and paste data from one app to another costs companies millions of dollars in lost productivity. Shahr Kaminitz, CEO of Serendicity Technologies Inc. in Yakum, Israel, thinks the WorkLight software his company displayed at Demo can solve much of the problem. WorkLight runs on a Linux server in your data center; it was demonstrated with a Serendicity-built connector to SAP apps that feeds data streams to authorized users. End users get browser plug-ins that let them subscribe to inside- or outside-the-firewall data feeds, and access rights are determined by their network directory profiles. Kaminitz claims that people can easily mix and match data from different systems to create their own data integration views. A Windows version will be released soon, and Kaminitz says connectors to IBM's MQSeries middleware and Oracle Corp's Siebel CRM apps are due later this year. Pricing starts at \$10 per user per month.

\$5.7M
Annual productivity loss for 1% workers from moving data between apps, says IDC.

**Run-amok users
probably need ...**

... an automatic nanny. With users finding more ways to muck around with their systems, you'll need more management controls. Another Demo participant, Rockville, Md.-based Triumfant Inc., says its Resolution Manager tool's analytic engine gathers hundreds of thousands of data points from installed software that's installed on Windows

systems. According to CEO John Prisco, Resolution Manager has configuration benchmarks for every machine on a network in its knowledge base, so it can detect PC anomalies and remediate them without human intervention. David Hooks, Triumfant's chief technology officer, says the automatic fixes don't even require end users to reboot their PCs. "It's true autonomous computing," Prisco boasts. Version 4, due this week, polishes up the Web-based user interface for sysadmins and adds support for BMC Software Inc.'s Remedy service management tools. Triumfant sells the technology through managed service providers, which set their own pricing.

**Enemies of ink
can unite ...**

... behind Zink. Another Demo denizen was Zink Imaging LLC, a Waltham, Mass.-based start-up whose name is short for "zero ink," according to CTO Stephen Herchen. And that's just what Zink offers — printed images and photos without any ink. "The magic is in the paper," Herchen says. Zink's patented paper is saturated with millions of cyan, yellow and magenta crystals that melt into a desired image when heated. The company expects that later this year, third-party manufacturers will ship mobile Zink printers, plus a 7-megapixel digital camera with an integrated printer. Herchen says the paper can't be torn and is water-proof, making it ideal for mobile workers. The devices will likely be inexpensive, but you won't want to waste any paper; it will cost 20 cents for a 2x3 photo. ▶



Zink's new hardware printer technology needs no ink.



250k
Daily usage for data integration tool.

The Highly Reliable Times

VOLUME 1 - ISSUE 2

 Windows Server 2003

WINDOWS SERVER TAKES CHECKERED FLAG OVER LINUX



You Hazy for The Highly Reliable Times

THE CONTIDROM, CONTINENTAL AG's storied test track located near Hanover, Germany.

BREAKING NEWS:

"Windows Server provides a reliable environment for mission-critical administration. The migration to Linux-based environments has been very difficult."

—Paul Schwefer, CEO of Continental AG



New System Gives Global Automotive Supplier 99.9% Reliability

By MICHAEL BETTENDORF

HANOVER, Jan. 2007 — "We needed rock-solid reliability, and we weren't getting it from our legacy infrastructure," says Paul Schwefer, CEO at Continental AG, one of the world's largest automobile suppliers with over 85,000 employees worldwide. Inadequate management tools made it difficult for Schwefer's team to keep system uptimes at the high levels expected at Continental AG, so a change in platform was necessary.

Initially, a Linux solution was considered. However, after a thorough evaluation, Schwefer's team determined that Linux could not deliver the reliable, predictable environment Continental AG required. Instead, they chose to use Microsoft® Windows Server® 2003.

With key features of Windows Server 2003 such as

group policy management, Schwefer found clear advantages over a Linux-based solution. "Windows Server provides a reliable environment with centralized administration and management," said Schwefer, who believes that superior manageability leads to high reliability. "Duplicating this level of service in a Linux-based environment would have been very difficult and more costly," he says.

The decision has proven successful: Since the implementation, Windows Server 2003 has provided 99.9% reliability in a distributed environment for Continental AG. For the full Continental AG case study, plus other case studies and independent research findings on the reliability of Windows Server versus Linux, visit us online at microsoft.com/getthefacts

BREAKING NEWS: Reliability linked to cheerfulness in IT professionals

In a trend with global implications, IT professionals such as Continental AG's Paul Schwefer (pictured at left) show obvious signs of exuberance.

—Continued on Page B3

BRIEFS

IBM Agrees to Resell Lawson Applications

IBM has signed an agreement to resell the S3 and M3 lines of applications from Lawson Software Inc. The deal is a result of efforts by both firms to better target small and midsize business users. The pact extends an earlier agreement under which IBM and Lawson jointly help users adopt service-oriented architecture technologies.

Lenovo Profits Up 23% on Flat Sales

Lenovo Group Ltd. reported a 23% increase in third-quarter profits despite flat U.S. sales. The vendor's worldwide PC shipments increased 6% during its third quarter, which ended Dec. 31.

LENDING BY THE NUMBERS

Q3 00	Q4 00	\$57.7M
Q3 99	Q4 99	\$48.9M

BT Group Acquires U.S. Services Firm

BT Group PLC has agreed to acquire International Network Services Inc. as part of a corporate effort to expand its services offerings in the U.S. The deal is valued at about \$196 million. The acquisition will add 900 employees to BT's worldwide professional services workforce of about 7,000. INS, which is based in Santa Clara, Calif., will become a wholly owned subsidiary of BT and will be part of the BT Global Services division.

Man Accused of Pirating Software

California police have arrested a 64-year-old man for allegedly selling illegally copied Microsoft Corp. and Adobe Systems Inc. software on the Internet for the past seven years. The alleged criminal sales netted G. Zarrir of Menlo Park, Calif., an estimated \$750,000. Police said Zarrir copied and then sold the programs, which included Microsoft's SQL Server Enterprise database and Adobe's Creative Suite 2.

SOA Can Be a Tough Sell

IT often must promote benefits to developers and business users alike

BY HEATHER HAVENSTEIN
SAP (U.S.)

MANY COMPANIES are banking on getting substantial financial returns from service-oriented architectures. But shifting to an SOA requires considerable changes in an IT department's focus and its approach to internal operations, according to attendees at a conference here last week.

For example, Marriott International Inc. has identified SOA as one of its three strategic technology pillars, along with business intelligence tools and commercial off-the-shelf software. The Bethesda, Md.-based company is tapping SOA technologies to help shorten software development times and pull more value out of its legacy systems.

But to obtain those kinds of advantages, you need to "turn your organization on its side" and incorporate SOA into thinking enterprise-wide, said Steve Wolf, Marriott's senior enterprise architect. "What separates SOA from a minor technology change is the fact that this is a fundamental change in the way we do business," he said during a session at The Open Group LLC's Enterprise Architecture Practitioners Conference.

Demonstrable ROI John Whitridge, Marriott's vice president of enterprise architecture, said his staff is trying to link the benefits of an SOA to Marriott's overall corporate goals of becoming more agile, bolstering customer service and growing revenue. Whitridge said the enterprise architecture team has also designed a "maturity model"—essentially a road map that outlines SOA principles and guidelines and highlights some of the incremental benefits expected along the way.

Con-way Inc. has seen a substantial return on investment from an SOA approach it has been using since 1998 that started with component-based development, said Majia Tibbling, lead enterprise architect at the San Mateo, Calif.-based freight transportation and logistics company.

The IT department can now change business processes as soon as an alteration is needed instead of having to rewrite code. Tibbling said. In addition, the SOA supports the electronic transmission of data to customs officials in Canada. That has slashed the average time it takes for one of Con-way's trucks to pass through customs gates to enter Canada from two to three hours to less than a minute, she said.

But to get Con-way to where it is now, the company's IT architects had to evangelize the SOA concept to software developers and business users alike. Tibbling said her team emphasized to the developers that they could stop doing common, "daily grind" coding. It also set up a services repository with clearly defined data describing the functions of different services.

"SOA is not something the business directly cares about," she said. "You have to identify the value that they care about, and that is the value you sell."

Hong Zhang, director and chief architect of emerging technologies at General Motors Corp., said the automaker's first-generation SOA was instituted in 2000 to enable the development of an online vehicle showroom for users in 40 countries. In taking that first step, GM developed an

SOA Projects Need to Be Systematic, Exec Says

SAN DIEGO

OVER THE NEXT nine years, Con-way Inc.'s SOA has evolved into an event-driven architecture that links computer systems, subscribers to its patch and process "events"—such as the receipt of an order—based on predefined business rules. Majia Tibbling, Con-way's lead enterprise architect, discussed the SOA's development in an interview with Computerworld at last week's Open Group conference.

What are some of the major lessons you've learned about developing an SOA, and what would you do differently if you were starting today? One thing we did right was, as soon as we proved the concept on our first pilot, it was understood we were approaching SOA as a systematic implementation. I don't see how it can be successful or valuable if you don't do that. Otherwise, you are in constant struggle with development managers about

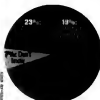
who will do development.

We didn't define an ROI metric upfront, so in our early progress we really had nothing tangible, [and] some business leaders really like to have a number. We had more IT-ish things that showed value, but we couldn't quantify them in real dollars. The organizational and cultural [changes] are huge—we could have done better with that. We also learned pretty quickly that we need to communicate often and thoroughly. We could have done more of that and better articulated some of the more intangible rules.

But many companies working on SOA have gotten to the point of doing complex event-based processing or managing by exception. Was that part of your vision from the beginning? It certainly was. We knew we wanted to do that level of complex event correlation and automation of business [processes]. I see in one part of the country a

Architectural Plans

Has your company invested in an SOA, or does it plan to do so?



BASE: 447 employees of U.S. companies, surveyed last year on emerging technologies and services

SOA philosophy that the company still uses, Zhang said. First, GM focuses on its core business functions and how those functions can work as services. Then the company turns its eye toward the technology needed to enable those services. "SOA is really about aligning IT capability with business intent," Zhang said. ■



Q&A

You said that early on, you didn't set specific metrics to measure ROI. How have you shown company executives a return from the SOA? By now, we have clear business examples. [But] upfront you don't have those. You need to sell [users] on the idea, and you need an executive sponsor, preferably the CEO, who really buys into it and knows how to sell it to the business. Upfront, they're going on faith a little bit. A lot of people will [sigh] because they aren't figuring out how to do a systematic implementation. This is where they have to trust it will work eventually and stay with it.

—HEATHER HAVENSTEIN

Fujitsu recommends
Windows Vista® Business.

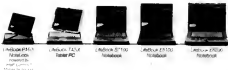
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ERP Rollout Continues to Weigh Down Symantec

Vendor blames weak earnings on proxy problems

BY MARC L. BORDINI

Symantec Corp. continues to try to work through a challenging rollout of Oracle Corp.'s ERP applications that has started to affect its bottom line.

In an interview last week, Symantec CEO David Thompson said the security and storage management vendor primarily involved internal process changes — not technical glitches. “We were changing the business processes fundamentally and dramatically, and the ERP system was enabling some of those changes,” he said.

The rollout started in December 2005, and the new ERP system went live last November, combining what had been separate Oracle-based financial and other management systems at Symantec and the former Veritas Software Corp.

Symantec, which acquired Veritas in July 2005, is running Oracle's E-Business Suite III applications on Sun Solaris servers. Using an Oracle Fusion Middleware portal on the front end, the new system was designed to provide a single point of contact for the combined company's customers and business partners, Thompson said.

Temporary Fix

Symantec also revamped its stock-keeping unit (SKU) product identifiers by creating a single set of codes for all of its applications. However, some smaller partners and distributors didn't update their systems to handle the new SKUs in time and were unable to submit purchase orders electronically after the ERP system went live, Thompson said. To cope, Symantec temporarily reprocessed the orders

manually while extending the deadline for the partners to use the new SKU system from Dec. 1 to this month.

Symantec also changed the way it sells software licenses, requiring all customers upgrading to new releases to register online and get a special electronic key for activating their applications. As reported previously by Computerworld, the new licensing process created confusion and delayed upgrades for some customers, particularly users of Symantec's Backup Exec tool.

Thompson said that led to a spike in call center activity,

forcing Symantec to hire more workers to handle the increased volume of phone calls. Symantec cited the difficulties with the UI implementation as a contributor to the disappointing financial results that the company reported for its third quarter, which ended Dec. 29. In its Jan. 24 earnings statement, Symantec said its results were below expectations, and it announced plans to trim \$200 million in annual costs through layoffs and other restructuring actions.

“Systems changes such as these certainly don't cause without issues,” Symantec

CEO John Thompson said during a conference call after the results were announced. “And we may have had more than our fair share of them with this set of changes, where we incurred higher expenses than planned and lost some revenue opportunities.” But, he added, “we believe the major technical and process issues are now behind us.”

James Beer, Symantec's chief financial officer, said during the call that the company will spend a “modest amount of incremental money during the [current] quarter to remediate the handful of issues that remain.” Beer said he also anticipates that the fixes will require the use of some of Symantec's internal IT resources.

David Thompson declined to disclose either the cost of the fixes or the ERP project's overall price tag. He said that Symantec is already paring down the number of call center workers it had added in response to the problems.

The company expects a variety of longer-term benefits from the new system, Thompson added. For example, having one set of ERP applications enabled Symantec to shrink its IT infrastructure and reduce its licensing costs with Oracle, he said.

In addition, the system has been linked to Oracle's PeopleSoft Enterprise human resources applications and to Salesforce.com Inc.'s hosted CRM software. ■



Process changes, not technical glitches, caused ERP system rollout issues.

Continued from page 1

Vista

Management Tool, or VAMT, is scheduled to be released in March. She said it contains a version of Microsoft's Multiple Activation Key (MAK) technology that works on a proxy server, plus other tools that the vendor has yet to disclose.

Another missing piece for early corporate adopters of Vista is KMS support for Windows Server 2003. Customers weren't able to run the KMS technology on that operating system until next month, said Cori Hartje, director of Microsoft's Genuine Software Initiative.

For now, that leaves users with a choice of running KMS off a Vista client machine, or a system with a beta copy of the next version of Windows Server, code-named Longhorn. Even Hartje said the latter option isn't “a practical solution.”

Michael Silver, an analyst at Garner Inc., said Microsoft was hoping that users would run KMS off Vista clients until the Longhorn server is available. But IT managers have pushed the software vendor to support Windows Server 2003.

There's no way I would even be planning a project like this until all the tools are ready. That all sounds like a whole lot of complexity and asking for problems.

“Customers don't want yet another machine somewhere to maintain,” Silver said. “They have enough Win2003 servers out there that could handle running this extra service.”

Microsoft released Vista to its volume license customers on Nov. 30 and claimed in a marketing campaign that there was no need to wait to deploy the new operating system. But as part of Microsoft's efforts to thwart rampant piracy problems, the operating system will go into a reduced-functionality mode on systems of the activation and validation process isn't completed within the prescribed 30-day window.

“Since most large companies take 12 to 18 months to test and

plot [an operating system], they're probably not inconveniencing too many people” by not having all the volume activation tools ready, Silver said. “Of course, it's not good to inconvenience those that really want to move early,” he added.

Users have an additional activation option — MAK for individual computers. Under that approach, each PC has to independently connect to servers at Microsoft via the Internet or a telephone connection to activate Vista. But large companies typically prefer to have their end users connect to internal servers.

Bill Lewkowski, CIO at Metropolitan Health Corp. in Grand Rapids, Mich., said he has no intention of deploying Vista before the first service pack of bug fixes is released. And the delayed volume-activation tools are yet another example of why large users should avoid early deployments, he added.

“There's no way I would even be planning a project like this until all the tools are ready,” Lewkowski said. “That all sounds like a whole lot of complexity and asking for problems.”

Microsoft itself activated

Vista systems for employees by running KMS off a Vista client machine in its IT shop, according to Hartje. She said she and her co-workers simply had to do “the regular installation you have to do with any software.” The activation and validation of Vista were “transparent,” Hartje said. “I didn't even know that I'd activated it.”

But Barry Lihenson, CIO at Ingersoll-Rand Co., called the activation system a “nightmare” that he would “just as soon let the system sort out.” He doesn't like either the MAK or KMS methods and views the process, as defined by Microsoft, as unfriendly for a company with 30,000 users. “We won't migrate until a more realistic approach is available,” he said.

“It's a horrible solution and one of the primary reasons we aren't actively evaluating a Vista rollout,” said John LaFrupe, an operating system administrator at OGE Energy Corp. in Oklahoma City. “The number of licensed machines we deploy makes this a prospect we don't wish to encounter at this time or at any time in the near future. It's the primary catalyst for us to evaluate alternative technologies.” ■

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ITIL Update to Cover Security, Outsourcing

Users eager to try new version of IT services spec

BY PATRICK THIBODEAU

AFTER the ITIL department at Raymond James Financial Inc. implemented best practices from the IT Infrastructure Library (ITIL), the number of calls to the company's help desk dropped as much as 25% within 18 months.

Fewer phone calls means IT workers are free for other assignments, said Brian Miller, manager of IT monitoring services and availability management at St. Petersburg, Fla.-based Raymond James. He credited ITIL's set of disciplined processes — such as finding the root cause of a problem — for the drop in help desk calls.

Miller said that by using ITIL's best practices, "you get everybody in every department playing by the same rules," which delivers big benefits in many IT areas, such as change management.

Miller and other IT managers are eager to get their hands on Version 3 of ITIL, which is due in April and will be the first new release since 2000. A lot of IT has changed since Version 2 became available.

Security processes, which users say are lacking in the current ITIL version, will

Getting Buy-in

■ Focus on a couple of high-moisture models and how they might have been acquired by sharing knowledge and adjusting ITIL best practices.

■ Gather metrics on how ITIL reduces the number of incidents and/or shortens the length of outages.

■ Celebrate ITIL successes and learn to market those success stories.

get more attention in the new release. According to Sharon Taylor, ITIL's chief architect, Version 3 will also cover an area that has exploded as a major IT management concern since 2000: outsourcing.

Version 3 will also provide guidance on the related issue of knowledge transfer, in a data center relocation, for example, knowledge transfer means ensuring that new employees or outsourcers know how to run the systems.

Roman Albrecht, an IT manager at DHL Worldwide Network SA NV's data center in Prague, said he wishes he had had ITIL guidelines for knowledge transfer in 2003 when, as part of a wider facilities consolidation, the company moved its London data center to Prague. "There wasn't any existing process

that you could take and just use — you had to develop it yourself," said Albrecht.

DHL is growing partly by acquisitions, so ITIL helps the delivery company ensure that its global IT operations follow one set of IT processes. "If you are a big company and you don't have ITIL, you will be dead very soon because your cost will be too high," said Albrecht. "Without defined, measured processes, you can't optimize — this is a key thing."

ITIL, which was developed by the British government in the 1980s, has become increasingly popular in the U.S., especially following passage of the Sarbanes-Oxley Act in 2002.

Vendors are also jumping into the ITIL services market. Hewlett-Packard Co., for instance, provides ITIL training for DHL employees, and CA Inc. does ITIL consulting work with Sprint Nextel Corp. The vendors are also producing tools intended to help automate ITIL processes. But David Taylor, CIO at the Florida Department of Health, said he looks at some of the products warily.

Cultural Change

Vendors claim that their tools are "based in ITIL" or "ITIL-compatible," Taylor said, but "we have avoided purchasing these products in favor of modifying and federating our own existing systems as we learn the fundamental principles and practices of ITIL."

Taylor said it's important for staffers to internalize how the ITIL framework works. "If you skip this step by initially purchasing a tool that masks some of the process, the culture change needed to sustain the buy-in for service management is compromised," he said.

Users agreed that the major barrier to implementing ITIL is cultural. "The adoption of best practices is met with resistance right upfront, and so buy-in is an evolutionary process," said Kirk Frost, who heads the Princeton, N.J., chapter of the IT Service Man-

agement Forum U.S.A. "To even get the finances approved, you get tested at all levels from the senior CIO level down." Frost is implementing ITIL at a financial services firm he declined to identify.

Sprint Nextel invested heavily in ITIL training and also focused on communications,

said John Montross, its vice president of managed network operations.

"We found that once employees learn about ITIL, they are eager to implement it because they see the value it brings to their work and how it can improve the customer experience," he said. ■

Revised Framework Aims to Help CIOs Demonstrate ROI

SUGGESTIONS for

Version 3 of the ITIL

Infrastructure Library come

from thousands of people

around the globe. But the

person responsible for the

and product is Sharon

Taylor, who is ITIL's

chief architect, as well as

president of Aspect Group

Inc., a consulting firm in

Ontario, Ontario. In an

interview with

Computerworld, Taylor

explained how Version 3

will help

CIOs.



Q&A

to this? We're talking

upward of thousands.

What else is new in

Version 3? One of the

gaps that evolved was

that the focus on service

management became

very operationally based.

The big change that we're

introducing is to take a

broader view of what service management encompasses, including strategic considerations, the design implications, the cultural and organizational change implications. So the major shift is to introduce service management from a life-cycle perspective, as opposed to just a process-based view.

What's going to be the takeaway

for CIOs? One of the things that

is most difficult to do with the

current version of ITIL is to develop

a solid business case for return on

investment. IT organizations face

competition through outsourcing

service providers, they are being

required to operate and manage

themselves as businesses and

produce value. From a CIO perspective,

the biggest benefit that the [new]

version of ITIL brings is that

we have added guidance

that allows senior executives to be

able to demonstrate, measure and

produce a return on investment for

supporting a unified best-practice

framework for service manage-

ment. It helps them to demonstrate

why investing in good service

practices gives them a solid return

on investment.

—PATRICK THIBODEAU

Bob Schwartz, 1951-2007

Robert A. (Bob) Schwartz, former CIO at Pannett Corporation of North America and president of Pannett Management Information Technology Co., died suddenly on Jan. 19 at the age of 55.

Schwartz was one of Computerworld's inaugural Pioneer 100 IT Leader honorees in 2000. In addition, he was a member of Computerworld's Strategic Programs Advisory

Board and served as a judge for the Computerworld Information Technology Awards Foundation.

"Bob epitomized the best of what can be expected from a senior executive,

an IT leader and a friend and advisor to so many in this industry," said Ron Millon, executive vice president of strategic programs at Computerworld.

"He was important to all of us in so many ways."



GLOBAL

Microsoft Takes New Tack on License Checks

LONDON

MICROSOFT CORP. plans to take a tougher stance with multiple companies in the U.K. that it suspects are using unlicensed software. The new approach could culminate in threats of legal action by the Business Software Alliance.

Ram Dhalwal, Microsoft's licensing programs manager in the U.K., said last week that the software vendor hopes the BSA's involvement will help "spark off the engagement" with customers targeted as possible users of improperly licensed or counterfeit products.

Previously, Microsoft contacted such companies by phone or e-mail and asked that it be allowed to audit their software.

Now, Dhalwal said, if it doesn't receive a response from a customer within 14 days, Microsoft will send a series of three "escalation" letters in successive weeks, with the last two letters warning that the case could be turned over to the BSA for legal action.

An International IT News Digest

The program is aimed at companies with about 250 PCs and is being implemented only in the U.K. at this point, according to Dhalwal.

■ JEREMY MARK, IDG NEWS SERVICE

Workforce in India Will Be Accenture's Largest

BANGALORE, INDIA

ACCENTURE LTD.'S top executive said at a press conference here last week that the IT services firm will employ more workers in India than it does in any other country by the end of August.

William Green, Accenture's chairman and CEO, said the company

projects that it will have about 35,000 employees in India as of Aug. 31, a 52% increase from last August's level. That would top the size of Accenture's U.S. workforce, which is expected to stand at about 30,000 people at that point, he said.

Accenture's Indian operations currently provide IT and business process outsourcing services, and Green said that the company plans to

train staffers in India to do new work in business consulting and other areas.

Green added that he doesn't expect the workforces in other countries to overtake India's for at least 10 years.

■ JOHN RIBEIRO, IDG NEWS SERVICE

Kenya Launches Effort To Build PCs Locally

NAIROBI, KENYA

WITH HELP from Lenovo Group Ltd. and two other hardware vendors, the Kenyan government is launching an effort to promote the assembly of low-cost PCs that could be sold to users in that country and other African nations.

Lenovo, along with Sahara Computers Pty. and Mutekel Ltd.'s Mezer unit, which are based in South Africa, will build the first 150 systems by Wednesday, a Kenyan official said at a kickoff ceremony last month. A group of universities in Kenya will offer courses to train local workers to assemble the PCs.

The initial funding for the project totals about \$300,000 (U.S.), according to the Kenyan government. The PCs will be based on Intel Celeron processors and are expected to be priced at about \$450.

■ MICHAEL MALAKATTA, IDG NEWS SERVICE

Compiled by Mike Bucken.

Briefly Noted

PSA Peugeot Citroën has signed a multiyear contract to deploy Hewlett-Packard's BLADE Linux software on up to 20,000 desktop systems and 2,500 servers. Hewlett-Packard also announced the contract with Paris-based Peugeot Citroën last week, didn't disclose the financial details or a timetable for the rollout.

■ JOHN BLAU, IDG NEWS SERVICE

Unilever Group has signed a tentative deal to outsource its data center operations to Hewlett-Packard Co. in the Americas region, as well as Asia, Africa, the Middle East and Turkey. The companies said they hope to reach a definitive agreement by midyear. HP would also take over server and database management and application hosting for Unilever.

■ PATRICK THOROUGH, COMPUTERWORLD

The German Federal Armed Forces have agreed to install more of SAP AG's software as part of a managing IT modernization project. The new contract, which covers more than 140,000 users and calls for the military to deploy the vendor's SAP for Defense & Security virtual industry software and NetWeaver middlewares.

■ JOHN BLAU, IDG NEWS SERVICE

Satellite Network Stops Paying Off for Edward Jones

CIO says new IP network will boost performance, support more apps

BY MATT HAMBLIN

AT&T Inc. last week announced a five-year, \$34 million contract to develop an IP network supporting voice, video and data traffic for Edward D. Jones & Co.'s 10,000 branch offices. The project will provide the St. Louis-based financial services firm with a virtual private network based on Multi-protocol Label Switching technology. In an interview with ComputerWorld, Edward Jones CIO Vito Ferrari discussed the new Global Branch Network, which will replace a satellite network that

the company has used since the 1980s. Excerpts follow:

Why are you moving to the new network? We've co-grown our satellite technology, and it's important for us to have a new conduit because we really need to provide the best tools to our financial advisers. AT&T's terrestrial lines enable us to do that. Satellite communications were limited in terms of bandwidth.

How is the project working out? We have 10,000 branch of-

fices, with one financial adviser per office. Already, using land lines has dramatically improved response times, so the network will not only allow more applications but [also] help them run faster. The response time on Web-based interactions is down by 75%. Currently, we have 4,000 offices converted. We started with AT&T about six months ago, and the due date for the conversion of all 10,000 offices is July 31. We're pleased with AT&T that it has met an aggressive time schedule.

What do you plan to do in terms of converging your network traffic? Our goal is to converge data, voice and video into one network. Previously, we moved video over satellite and then to

TV monitors from the satellite. Through these new lines to the desktop, we can converge [everything]. Satellite is really great for streaming video but not for two-way data communications, such as Internet traffic.

Were you getting many complaints from your users about the satellite network? We have an anonymous electronic suggestion box, and our financial advisers and branch office administrators gave us constant feedback. It was dramatic stuff, yes. There was recognition across the firm that a change was needed. And now they're giving us great feedback on the new network.

So how did the satellite network come about in the first place? It

was the right decision going to satellite back in 1988, and it's the right decision coming off satellite in 2006 and 2007. It was very reliable, with two uplinks—in Tempe, Ariz., and St. Louis. About 80% of the time, the uplinks came from Tempe, but there is usually beautiful weather. With bad weather, you'd have interference. But the main thing now is that satellite is not great for the scale of the Internet.

Will this result in any cost savings compared to your satellite costs? Moving from satellite to terrestrial will be more expensive. But new, more sophisticated tools will be delivered, and the new network plays a critical role in their delivery. The cost is well worth it. ■



DON TENNANT

The Rogue Lawyer

IT ALL BEGAN innocently enough with a story that was hardly an eyebrow-raiser. The article, "John Hancock reaps big benefits with new SRM software," was written by *Computerworld's* Lucas Mearian and posted on our Web site on Jan. 17. It was the type of story we cover all the time—a user story that explains a technology problem encountered by IT pros and what they did to solve it.

In this case, the problem was storage system bottlenecks and blackouts, and it was solved with a storage resource management appliance. The implementation was successful, so everybody at the company should have felt good about it, right?

Well, that's what I thought, until we received a phone call on Jan. 25 from one of John Hancock's lawyers. The lawyer demanded that we remove the article from our site because we had failed to obtain a legal release from John Hancock to post it. No, I'm not kidding.

I explained to the lawyer that she's not how reporting the news works. I asked her whether, in her capacity as a consumer of news, she wants news stories to be vetted by the parties covered in the articles before she's allowed to read them. I could almost hear her rolling her eyes.

"This isn't about world peace," she said sarcastically. "This isn't Darfur."

She lightened up long enough to ask me to remove the article as a professional courtesy. When I asked her to give me a reason that would substantiate such a request, she claimed that the article contained confidential information that she couldn't specify because it was, well, confidential.

I declined, and she got belligerent, declaring that she would be sending us a cease-and-desist letter. When she asked me for our mailing address, I gave it to her, and I asked her where she was located as a lead-in to getting her name and contact information.



"The John Hancock Tower," she snapped. "Look for us." And she hung up.

The whole thing was sort of surreal. Mearian, who had spoken to the lawyer before the call was escalated to me, wrote about the episode in his blog. He noted the irony of a company named after one of the founding fathers having such a lack of appreciation for freedom of the press.

A reporter from the *Boston Herald* picked up on the story, and I told him I presumed that John Hancock wanted the article to disappear because it included a candid account from an IT manager about how the storage bottlenecks caused some finger-pointing between the applications and infrastructure.



structure groups at the company.

My concern was that John Hancock would come down hard on the IT manager who had the courage to speak openly with us about the challenges he faced and how he overcame them. That sort of experience-sharing is the lifeblood of the IT profession, and it's *Computerworld's* raison d'être.

In the end, however, we found that John Hancock wasn't the unreasonable behemoth it appeared to be. We were informed that the lawyer who had contacted us did so without authorization, and on Jan. 29, the company issued this statement:

"John Hancock respects the right and the need for media outlets to report the news. We regret that *Computerworld* was contacted and any unauthorized statements that may have been made to the publication."

Hopefully, the company also respects the need for IT professionals to speak freely to the media, barring the disclosure of truly confidential information. At its best, John Hancock will demonstrate that stymieing the trade press with overly restrictive corporate communications policies does nothing but sink a valuable resource in an ocean of timidity. ■

Don Tennant

MICHAEL H. HUGOS

The Rise of The Business Analyst—Again

WHEN I got into the IT business years ago, I thought the business analyst was the most pivotal person in the whole profession. That was the person who was the bridge between business and technology, the one who could see and understand both sides and whose goal was to apply technology to support business initiatives that would help the company grow revenue or shrink operating costs.

Over the last 20 years, we lost sight of that, as the technology focus began to shift away from IT and toward the business users. The PC dethroned the mainframe and minicomputer. Local-area networks enabled whole companies to run on PCs and servers. The chips powering PCs got more and more powerful, allowing the software to get more fully featured.

Then the Internet hit the big time, and for the past 10 years, we've been exploring the many things you can do when you combine people and computers in real-time networks via the Web. But by now, the newness has worn off, and we are back to thinking about that old concern of how to use this stuff to make money. That's where the business analyst comes in once more.

A lot of IT functions have been outsourced, including data center operations, programming and the help desk. The one function that doesn't seem to lend itself to outsourcing is business analysis. To effectively look out for their best interests, companies have to analyze their specific chal-



Illustration by Jeffery J. Pappas
 presented at the Center for Systems Innovation and a member of the 2006 Computerworld Pioneer 100 list. He is a Senior Consultant at PricewaterhouseCoopers. He is the author of the book *Business Analyst: The New Role of the Business Analyst* (New York: McGraw-Hill, 2007). He can be reached at mhugos@pwc.com.

lengers and find unique responses to them. If they play the "me too" game of simply doing what everyone else is doing, they will reap no real competitive advantage. Sure, a company can bring in consultants to help and to train its analysts, but it cannot get consistently good results if it outsources the whole analysis function. Why? Because an analyst needs to really understand the company he is working with, and the best way to do that is to live there and be part of it.

I often hear that companies have not developed their business analysis capabilities because they believe that analysts use soft skills that anyone can exercise without much training. I beg to differ.

I was once asked to start up and run a group of business analysts for a company that already had a 100-person IT department. As part of that job, I had to define the specific skills my analysts should have and then put in place a training and career advancement program that would develop those skills. This gave me cause to think carefully about the skills that analysts need and how to develop them.

Here's what I found:
 ■ Business analysts must be able to facilitate joint application-design sessions that involve groups composed of both business and technical people. They need to actively include everyone in the sessions and encourage people to contribute their ideas.

■ They need to do process mapping. This is often a very good way to focus the conversations of a group in a design session and provide a big-picture context in which to place people's ideas.

■ They need to apply data modeling to organize the data flowing through the business processes they are designing. By this I mean logical data modeling (not the creation of physical data models in fourth normal form).

Once analysts have facilitated group design sessions, created process flow diagrams and organized the relevant data into a logical data model, they must pull this all together and create the user interface for the system that will drive the activities in the

process flow and handle the data in the data model. This is where analysis turns into synthesis, and where the design of any new system emerges. And as if all that weren't enough, good analysts must also be skilled at system testing, user training and even project management.

Soft skills? These are some of the hardest skills to master in the whole IT profession. And companies need good business analysts now more than ever if they are going to thrive in our fast-changing global economy. ■

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READERS' LETTERS

Readers' Views on Techies' Language Skills, H-1B Visas and Free Markets

THERE'S NO doubt the e-mail letter to whom Don Tennant refers in his editorial "A Wake Up Call" (Opinions, Jan. 15) is not the most evocative, but the messages I've seen authored by H-1B visa holders show that neither citizens nor immigrant workers have a lock on poor language skills. Besides, e-mail has become the medium of poorly written messages.

To judge an individual's merits based on a few lines of text smacks of snobbery. And to use this to establish a thesis on quality and the assumption that American workers don't embody it is overly simplistic. In fact, it's been my experience that most technical people are generally poor writers.

The writer of that e-mail voiced perfectly valid concerns about the H-1B situation, regardless of the fact that he expressed himself without stylistic class.

I work with numerous H-1B visa holders, and several things are clear: Their jobs could be filled by U.S. workers of equal skill; the system is abused by employers who are looking for indentured servants, visa holders are often clamping at the bit to get out from under the H-1B yoke, and many visa requests come from former H-1B visa holders who have acquired their green cards through the sponsorship company. I'm not an apologist. In fact, I'm a free marketeer who believes in open and fair competition. The H-1B

system, however, is anticompetitive and creates a class of employee that is ripe for abuse by corporations whose only motivation is trimming the bottom line.

Instead of the current H-1B visa a more open immigration system needs to be established that allows people with valuable skills the opportunity to easily establish legal residence in order to compete fairly in the employment marketplace. Until such a thing happens, the existing format will be used by organizations for the import of cheap labor.

Phil Steinschneider
 Senior software engineer,
 Sterling, Va.

I OFTEN HAVE to communicate with what Tennant calls "the brightest and best from all over the world" and while I can at least understand what the guy he quoted was saying, I can't say the same for them. I also don't buy the argument that communication skills are the reason American IT workers are losing their jobs to foreign workers. My company has outsourced many of its IT jobs. Our own management has told us that this is not about our performance, but about the money.

Craig Tenby
 Hewlett-Packard

AS MORE companies hire more and more H-1B visa holders, displacing Americans from their jobs, the brightest in future gen-

erations will not go into high-tech and engineering careers. Then the colleges and universities will discontinue computer and engineering studies because of a lack of enrollment.

The H-1B program was supposed to bring in individuals with extraordinary skills and advanced educations, not average workers.

Howard Eichenwald
 Consultant, Overland Park, Kan.

I AM AGAINST the H-1B visa program, but we need to let go of the misperception that somehow we would be better off if only we could keep foreigners from taking our jobs. This is not a zero-sum game. If the work we perform has value, it increases the need for that work. Bringing in more foreign workers will likely increase the demand, both foreign and domestic. But we should accept all the immigrant professionals who can find a job, and let them come and go as they please.

I am an embedded-software consultant, self-employed by choice. As I struggle to build a business, I am envious of the income levels of H-1B engineers doing the same work. But I hope one day to be sufficiently successful to become the one looking for talent. If that time comes, I will be looking for performance and value, not origin.

If wages are the compelling factor, then we should be demanding increases in H-1B allotments

rather than watching our jobs get outsourced to India, Singapore and China, where competent technical professionals are available for 10 cents on the dollar. Rather than watch as technical jobs migrate to foreign countries, we should bring the best and the brightest from the rest of the world here. If they stay, we win. If they leave, most will become key figures in their own nations.

David H. Lynch Jr.
 Owner, D.H.A. Systems,
 dhl@digicad.net, Lantz, Pa.

I DO NOT believe we have a tech worker shortage in this country but that doesn't mean I believe in absolute protectionism, either. Someone needs to bring a realistic proposal to the debate. We cannot shut our borders, but we should not tolerate the status quo, either.

I worked for a year in England through a program that is similar to our H-1B status in the U.S. The company for which I worked needed to show that no local talent was available to fill the job. To do that, they carefully crafted the job description so that no one else could possibly fit the bill. The problem with that argument - and others like it - is that I worked for a relatively low wage, and my work status was tied specifically to that company.

Similarly, H-1B visas must be sponsored by companies. Companies practically own their H-1B

personnel, since they cannot jump to a better paid position without first having the other company sponsor their visa. If we untied the permit from the company and allowed these visa holders free run in the market as we do our own citizens, we would quickly find that there is no low-cost incentive for companies to hire foreign workers.

Ben Weinberger
 Fort Lauderdale, Fla.

I AGREE WITH Tennant. Excellence in all we do is required to stay at the top of our game in IT. After 20 years in IT, I still view myself of technical training and the continuous pursuit of knowledge. I know I have more to offer than an outsourced alternative, but I also know that I have to know more and offer more to remain competitive. I think disgruntled IT people refuse to admit that they have to sharpen their skills to remain competitive. Salespeople have always known this. It's high time IT people get competitive instead of licking their wounds.

Marcia Wilson
 Sparks, Nev.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to: Jamie Eccles, letters editor, Computerworld, PO Box 9971, Spen Street, Framingham, Mass. 01901. Fax: (508) 678-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

STRATEGIES & TACTICS

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CAUGHT IN THE IT PAY SQUEEZE

CIOs struggle to reward top performers as they pay out big bucks to land niche skills.



By Thomas Hoffman

TIM RAMSAY faced numerous challenges in his search for a security manager for the University of Miami late last year. For starters, the tight IT labor market in southern Florida was forcing the university to compete with international banks, travel companies and other organizations for the same scarce talent.

Moreover, although Ramsay's ideal candidate was a seasoned security chief who could set a vision and create policies for the university, he realized after the first handful of interviews that it would be difficult to find someone who had all the qualities he was looking for.

But Ramsay also faced a more far-reaching problem. Once the Coral Gables, Fla.-based university extended a nearly six-figure offer to a candidate, Ramsay would need kid gloves to handle the reaction from IT staffers, who would know the salary range based on the job title and grade. "There's no easy way to be competitive with new hires without running the risk of creating an internal morale problem with incumbents in the same job class," says Ramsay, the university's associate vice president of IT.

Ramsay is referring to the compensation squeeze play that he and other IT leaders are currently facing. As demand for certain types of IT competencies has heated up, particularly for niche skills in areas such as industry-specific ERP technologies or upper-echelon .Net development, companies have had to pump up their offers to snare the right people.

At the same time, CIOs are under enormous pressure from senior management to hold down their IT labor costs. Executive uncertainty about the economy has kept overall salaries down, and the increased use

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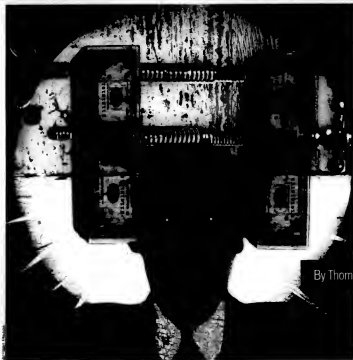
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...INFRASTRUCTURE LOG

...DAY 34: This indecision is sinking the business.
How do we move to a service oriented architecture?
Where do we start? Can we reuse what we have?

...Infrastructure quicksand!! We waited too long. I'd
throw Gil my tie, but it's a clip-on.

...DAY 37: A lifeline: IBM WebSphere middleware! It's
already helped thousands of customers build an SOA.
Adapters give us a standardized approach to integrating
apps from SAP, Oracle and others. And it lets us reuse
what we have, saving time and money.

...Oh, great. There's sand in my yogurt.

IBM



WebSphere

Download the reuse and connectivity kit at:
IBM.COM/TAKEBACKCONTROL/CONNECT

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of lower-paid IT workers overseas has helped depress wages for developers, help desk technicians and other technologists whose jobs are vulnerable to outsourcing, notes Craig Symons, an analyst at Cambridge, Mass.-based Forrester Research Inc.

In fact, the average salary index increase for IT employees has barely kept up with inflation. In 2006, the average IT salary rose just 3.8%, according to Computerworld's latest salary survey. And Gartner Inc. forecasts that 2007 IT staff budgets will rise just 3.5%, says analyst Diane Berry.

So while IT leaders are whapping out their checkbooks to court coveted candidates, they're also trying desperately to find ways to keep their top performers from moving to greener monetary pastures.

"You constantly have to worry about it," says Dan Demeter, CIO at Korn/Ferry International, a Los Angeles-based executive recruitment firm. "If you bring someone in at the higher end, you don't want [IT staffers] wondering why a new person has been brought on for so much money."

New Worries

This situation is different from that of the recent past in several ways. It's more complex than the frenzied IT labor market during the dot-com boom, when hysterical demand lifted wages for many IT workers across the board. And though employees in the late 1990s were also looking for specialized IT skills, today's companies are looking for IT workers with combinations of specialized skills, says Jim Lanzetta, vice president of strategy and marketing at Yoh Services LLC, a Philadelphia-based provider of talent and outsourcing services.

"It used to be 'Go find me a CRM specialist,'" says Lanzetta. "Now it's 'Go find me a CRM specialist who has expertise in the pharmaceutical industry.'" Such candidates don't come cheap.

Polishing Hidden Gems

MOST IT LEADERS do whatever is possible to hold on to the in-demand workers such as ace programmers or top project managers. But smart managers know that there's also a less visible class of performer they don't want to overlook - network managers, help desk experts and other IT infrastructure staffers whose behind-the-scenes roles are critical to ensuring an organization's day-to-day operations. Keeping both sets of workers happy is tricky, but the results are worth the effort.

"Managers who do this eloquently will have a better performing organization," says Diane Berry, an analyst at Gartner Inc.

For starters, smart CIOs make the point that an employee's value is about talent and commitment, not job title. Russ Finney, CIO at Tokyo Electron America eschews labels like "A Team." He makes sure that his IT managers are communicating frequently with their direct reports to see that all IT staffers are engaged and challenged. "Philosophically, everybody can be an A team player if you can just get them into their sweet spot," he says.

Eric Goldfarb, CIO of Atlanta-based BeamingPoint Inc., also resists labels. Instead, he uses training and new job assignments to keep all employees growing. "I've seen 'A' players turn into 'B' players and vice versa," says Goldfarb. "[talent performance] starts with the CIO setting a vision for the IT organization and people working toward meeting that vision."

[It executives at the University of Miami use similar methods, particularly to reward workers who are looking to improve their own skills. "Those people who are showing initiative and are adding value take a lot of pride in being given additional responsibilities," says Tim Ramsey, associate vice president of IT at the university. "They see it as an endorsement of what they've accomplished."

- THOMAS HOFFMAN

but it's still considered a perk, and Finney tries to distribute the trips equitably. "We try not to limit this to a select set of people," he says.

In some cases, retaining critical performers requires creativity. Last year, Mohegan Sun CIO Dan Garrow was in danger of losing one of his top programmers, an employee with extensive gaming systems skills who was well-versed in the casino company's quality assurance and testing requirements.

The programmer moved to Spain because his fiancée took a job there, so Garrow hired him as a contractor. "He knows everybody here and knows his way around the organization," says Garrow. "He can write and submit code from overseas."

Despite this kind of flexibility, retaining IT talent has been difficult for Garrow. The previous CEO, who left the company last summer after an 11-year run, believed that all company employees should receive standard 4% annual pay raises. That made it more difficult to reward individual IT performers.

To get a better handle on compensation, Mohegan Sun recently hired consulting firm Mercer Oliver Wyman to conduct an assessment of employee pay. Once that is completed, Garrow expects that the salaries of various workers - including IT staffers - will be adjusted to reflect the market. Also, the new CEO "will be more amenable to performance raises" than the previous chief was, says Garrow.

Dollars Deliver

Innovative tactics aside, many say compensation is still king. At Irvine, Calif.-based Hyundai Information Service North America LLC, the turnover rate is 15%, says Rich Hoffman, president and CEO of the IT arm of Hyundai Motor America. He estimates that 80% of those who have left recently have departed for higher salaries.

Despite these losses, Hoffman is learning how to leverage the dynamics of an increasingly bifurcated

"There's no easy way to be competitive with new hires without running the risk of creating an internal morale problem."

TIM RAMSEY, CIO, UNIVERSITY OF MIAMI

But the pressure to keep the existing workforce happy is also intense because it's getting harder for CIOs to find - or replace - certain skills. In the IT organization at Tokyo Electron America Inc. in Austin, for example, turnover is still relatively low, at 5% to 7%. "But the 5% to 7% that leave is very painful, because these are very important skills that are hard to replace," says CIO Russ Finney.

So Finney uses various nonmonetary techniques to keep his staff engaged. "We're putting a lot of energy into making sure our people feel good about their jobs," he says. One method is stretch assignments, or projects that challenge them. This might include taking someone who has worked on a component of an ERP implementation and placing him in charge of an entire ERP project for one of the company's seven U.S. operating companies, says Finney.

Finney has also made an effort to give as many of his IT staffers as possible an opportunity to travel to Japan to visit Tokyo Electron's headquarters. There has to be a business rationale for the trip, of course,

Pushing Back

Here are some tactics for surviving the squeeze:

- Identify your top IT performers and those you want to retain for the foreseeable future.
- The compensation plans to business results. Compensation drives behavior and results.
- Check the market regularly to determine how much money certain skills are commanding, and adjust individual compensation accordingly.
- Customize perks and benefits to meet the work/life needs of individual employees.
- Develop a firm system for grooming next-generation leaders.
- Create multiple career paths for IT workers, aided by rotational work assignments.
- Implement nonmonetary recognition programs. They don't cost much, but they're powerful in making people feel valued.

- THOMAS HOFFMAN

IT labor market. As a starting point, he makes sure he has taken care of his most valued employees and up-and-comers by keeping their compensation pace with market wages and bonuses.

Then, less strategic IT activities at Hyundai are outsourced or sent offshore, and most of the savings are redirected into the salaries of the company's IT workers. "Since organizations don't do as much IT work in-house anymore, there's a lot more flexibility" with this approach, says Hoffman.

For CIOs stuck in the salary squeeze, there's no silver bullet. On-the-job challenges, stretch assignments, innovative environments, career development opportunities and creative approaches to work/life balance are all important, but ultimately, especially for top performers, money still talks.

"We've done about all we can in terms of benefits and perks for those higher-level individuals," says Rebecca Wettmann, an analyst at Nucleus Research Inc. in Wellesley, Mass. "But benefits and perks don't fill gas tanks." ■

_INFRASTRUCTURE LOG



_DAY 33: Our information is siloed. Unmanageable. People can't access the latest info to make decisions. Gil's resorted to giving everyone access to everything all at once.

_Monitors now outnumber humans 18 to 1.

_DAY 36: It's clear to me. We need an IBM Information On Demand middleware solution. Info will be liberated from the silos—available when we need it, whatever the format. Accurate and in context. Now we can make smarter decisions and deliver real business value.

_Access is a beautiful thing.



Information Management

See innovative IBM Info Management solutions in action:
IBM.COM/TAKEBACKCONTROL/INFO

IMAGINE PLACING an electronic order to hire an employee the same way a factory manager uses ERP software to order more parts for the assembly line. That's roughly what's happening at Oregon Health & Science University (OHSU). And the payoff is significant: The university is filling job openings two weeks faster than it once did and saving at least \$1,500 per job now that it's using Oracle Corp.'s iRecruitment software.

The iRecruitment application, part of Oracle's E-Business Human Resources Management System (iHRMS) suite, enables managers to electronically request a new employee and process applications. The software handles most of the time-consuming administrative work, including routing requisition forms to the appropriate managers and posting the job on the Web site. "We wanted to be able to open a job requisition in the morning and have qualified candidates in the afternoon," says Joe Tomm, director of HR information services at the university.

In fact, OHSU now has access to applicants within minutes of a job opening being posted to the university's Web site, and it fills those jobs in just four weeks instead of six or more. The university also recently added Oracle's Manager Self Service module for logging changes to employee status — such as promotions or use of family leave — and uses the Oracle Employee Self Service application for benefits management. Tomm expects to add software for performance reviews, succession planning and learning management over the next couple of years.

Large and midsize organizations such as OHSU are increasingly turning to these new types of employee management applications — commonly called human capital management (HCM) or workforce optimization software — to automate HR processes that used to be done manually, on paper or by e-mail. HCM applications can be purchased either as individual, niche products or as integrated suites containing most or all of the various HCM functions. Companies such as Oracle, Kronos Inc., Keneca Corp. and Lawson Software Inc. have been buying or building technologies to create broad HCM suites.

"Human capital management covers the whole discipline of managing the workforce, bringing them in and tracking them over time," says Christa Degan Manning, an analyst at AMR Research Inc. in Boston. AMR forecasts a 10% compound annual growth rate through 2010 for the \$6 billion HCM market.

Much of the market growth can be attributed to the upcoming retirement of baby boomers, which will shrink the pool of available workers, says IDC analyst Albert Pang. "Companies need to better automate their systems in order to identify employees they want to retain and then provide a career path for them," he says.

HCM tools automate time-consuming administrative tasks and provide analysis for strategic decision-making. Specifically,



**HUMAN RESOURCES
DEPARTMENTS ARE
EMBRACING SOFTWARE THAT
BRINGS EFFICIENCY, RIGOR
AND ROI TO THE ART OF
MANAGING PEOPLE**

ILLUSTRATION BY JUAN FRANCISCO PROFFER

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_INFRASTRUCTURE LOG

_DAY 19: The business is, uh, coming apart. I.T. isn't in sync with the suits. No one's sure what they need to do. It's totally out of control.

_DAY 20: Gil fell into the crack. Maintenance is on it.

_DAY 24: I've got it. IBM Rational. A modular platform that lets us govern the entire development process and align it with our business goals. Now everyone's on the same page. Plus, we can ensure our software's in compliance and implement a service oriented architecture.

_Everyone's glad the crack is gone. Gil says his nightmares about "the dark place" are practically over.

IBM

Rational

Get our white paper on governing development at:
IBM.COM/TAKEBACKCONTROL/GOVERN

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(continued from page 24)

HR applications can handle the following tasks:

HIRING. Sony Computer Entertainment America Inc. uses its recruitment software from Workday, a client to automate its process for hiring contract workers.

Sally Buchanan, director of human resources at Sony Computer Entertainment, says the software is particularly useful for ensuring that hiring managers understand and comply with the legal distinctions between contract and salaried employees.

"When they request a contractor, they must answer a series of questions through the Workday system, and the application renders a recommendation on whether the position is best filled by a contractor or by someone on the payroll," says Buchanan.

TRACKING PERFORMANCE AND PROMOTIONS. Employee performance management, career development and succession planning are all functions that can be automated in HRM applications, for example, iCivics International HR uses Kenexa's CareerTracker to track employee performance and promotions. The software, which is configured with Tyco's performance standards and rating system, can plot employee performance on a graph to identify the top performers both in terms of job achievement and in meeting Tyco's leadership behavior standards.

Using the database of employee credentials and expertise, Tyco can also locate the best people to fill key job openings and analyze what types of training they'll need. "We can identify who we have and how they fit," says Sharon Kitzling, director of organizational development at the Princeton, NJ-based company.

According to AMR's Manning, most corporate executives like having a tool that helps them evaluate and promote people on purely objective criteria.

"They know it's not based on, 'I like how lively we go to lunch every day.' It brings some real science to the process and allows you to not only identify your top performers but [also] tell them why they're top performers," she says.

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Compensation management, another function often found in HRM tools, enables organizations to create incentive programs, like compensation to performance goals, and analyze pay packages and trends.

SCHEDULING. Scheduling work shifts for 27,000 health care professionals in a wide range of specialties and at multiple locations is a formidable task. But at Bam-

SaaS Appeal

The software-as-a-service model is proving especially popular for new categories of enterprise application, such as human capital management. In fact, the majority of HCM vendors offer their applications as services via subscriptions as well as through traditional licensing.

SaaS is a popular way to deliver these new applications in part because companies are less likely to have a formal centralized set of priorities for tasks such as managing human resources and are therefore more open to adopting the software vendor's best practices, according to AMR analyst Omnia Degnan Manning. In addition, SaaS offers a less resource-intensive method for implementing a brand-new application, particularly for far-flung multinational companies.

If executives may want consistency, and they believe that software can provide it. But they don't want to deploy and maintain different versions in different parts of the world, says Manning. "SaaS vendors don't get paid unless you actually use the software," she says. "So they want to help you get as many people as possible up and running on the application."

— SUE HILBRETH

ner Health, a large hospital system based in Phoenix, the implementation of the Kronos scheduling application has automated much of the process.

Ranner uses the Kronos application to log hours worked and to plan schedules, says Kathy Schultz, director of IT at Ranner Health. Integrating data about hours worked with future scheduling helps to ensure that employees aren't expected to work if they've just put in a lot of overtime. "What [should you work] isn't always what you were scheduled to work," notes Schultz. "Having scheduling integrated with live time-and-attendance information is extremely critical."

TRAINING. At pharmaceutical giant Novartis AG, sales and research and development professionals are expected to take various classes to keep them up to date on the latest products and trends. With about 350 Web-based and classroom-based courses available, the old paper-and-pencil-based process for administering training had become cumbersome and time-consuming.

But by using Saba Software Inc.'s Learning Suite, administrative work has been reduced by 50%, according to John Talanca, head of learning technologies at Novartis. "It's allowed the administrators to be more efficient and take on other work. In the past, they would spend hours and hours each day managing this," says Talanca.

ANALYSIS AND FORECASTING. HR applications often contain a variety of employee data, including salaries, experience, education, performance reviews and benefits selections. Analysis tools can enable HR managers to leverage that data for strategic decision-making. They can, for instance, track employee performance against company benchmarks, forecast the

skills that will be needed for future projects, analyze salary increases by geographic region or professional field, or predict trends in benefits selection and costs. For example, OHSU's Tom hopes to eventually use analysis tools to better evaluate recruiting practices, fanning the school's recruiting campaign could produce better candidates as well as lower costs.

"We can see how many applications a particular source gives us, and whether we ever hire applicants from that source. If we do hire them, do they become successful employees? Turning an ad in the Oregonian might produce a thousand applications. But if we didn't hire any of them, then that was a whole lot of administrative work that didn't bear any fruit."

Integrating HCM

Individually, the various HCM tools are helpful, but to get optimal value, they need to be integrated, with the data stored in a common repository, Manning says. But that isn't easy, because most HCM products started as stand-alone applications. Lately, however, a flurry of acquisitions by larger HCM and ERP vendors, such as Oracle, Kenexa and SAP AG, has resulted in more integrated HCM suites.

That's good news for users, but sometimes integration can't be achieved just by buying a suite. Organizational issues may be in the way, such as if the various HCM functions are split between different corporate departments. Or if the HCM suite has to be implemented across multiple business units running disparate ERP and HR applications.

At Novartis, for example, Talanca's e-learning department is separate from HR. Talanca would like to see the HR department adopt Saba's performance management software so that more HR data would be available for analysis, but it's out of his control. "There's no reason why someone's learning plan and transcript shouldn't be part of their performance record, in one system," he says.

Tyco has a different integration challenge. The data on its 250,000 employees in 72 countries is divided among 25 different HR applications and hundreds of payroll systems. Integrating all these systems with the Kenexa CareerTracker would have been too difficult, so Tyco and Kenexa created an employee self-registration version of the software, which allows workers to enter their own data into the system.

That information has been helpful to Tyco managers in staffing 300 new positions. "We can see what talent we have and move them across the business units," says Zitting. "The [software] is invaluable in this context."

Organizations such as Tyco are increasingly viewing employees as assets to be acquired, cultivated and deployed strategically — not unlike product inventory or IT systems. "The very name of the software category, human capital management, conveys the notion that a worker is an investment that should be optimized."

"Managers want to see how the people they hired are doing," says Manning. "It's taking the organization's people assets and leveraging them to reach business goals, such as increasing sales, profitability and customer satisfaction." ■

Hilbreth is a freelance writer specializing in enterprise software trends. She can be reached at Sue.Hilbreth@comcast.net.



"I'm really excited about the opportunity to work with a company that is so focused on the future."

HR systems have helped me to get a better picture of employee needs and to provide better service."

Many companies can't get a better picture of employee needs and to provide better service."

Continued from page 24

HCM applications can handle the following tasks:

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_INFRASTRUCTURE LOG

_DAY 44: This lack of productivity is out of control. What we're using isn't working. Gil's had enough. He moved everyone into one cubicle. A "collaboration" cubicle. We need a better idea.

_DAY 46: I'm going with IBM Lotus® Notes® and Domino®. It's more than e-mail; it's an open platform designed for collaboration. It has proven security features and productivity enhancers like document sharing and custom app development. And it's flexible enough to integrate across multiple platforms, including J2EE® and Linux®.

_OK, who sat on my lunch?

IBM.

Lotus.

Download the Lotus Notes & Domino demo at:
IBM.COM/TAKEBACKCONTROL/COLLABORATION

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In IT projects, communication is key, says ROBERT SCOTT, vice president of information and decision solutions of Procter & Gamble.

SILENCE IS DEADLY

IT MENTOR Having five critical conversations can mean the difference between success and failure in IT projects. By Robert Scott

IN A WEB 2.0 WORLD, IT is dramatically redefining business models. Whether providing new ways to reach customers, establishing radically new business-to-business relationships, cutting new-product time to market in half, or enhancing worker productivity and global collaboration, IT is the core enabler.

These days, however, less than 30% of corporate initiatives come in on time, on budget and on spec. The rest either fail outright or are significantly disappointing. So while much has been done to improve new processes, tools, techniques and governance concepts in the past 20 years, there is surprisingly little progress to show for it.

This point was dramatically emphasized recently by a major study called "Silence Falls: The Five Crucial Conversations for Flawless Execution" (see box at right).

"Silence Falls" was conducted by The Concoors Group and VitalSmarts

LC to identify the causes of IT project failure. This worldwide study involved more than 1,000 executives and project management professionals representing a cross-section of major corporations. It included analysis of more than 2,200 projects. The Procter & Gamble Co. was one of 40 companies participating. Our goal was to determine how we could take our project management competency to the next level.

What we learned was alarming. The research suggests that the culprit in 83% of project failures is silence. The study showed that there is a definable set of project communication problems that are far more common than most senior leaders realize. An estimated 90% of project managers routinely encounter one or more of five critical problems in the course of a project, but the killer is the silence that follows. Initiatives are derailed when people are unwilling or unable to have conversations about the problems they see. When one or more

of the five crucial conversations doesn't happen, problems fester, work-arounds proliferate, politics prevail, and failure becomes almost inevitable.

But there is hope. This research and our experience tell us that the light at the end of the tunnel doesn't have to be an oncoming train. The study discovered that when people are able to discuss these core problems effectively, projects come back on course. This finding was hugely important for P&G because we manage more than 1,500 IT projects each year, more than 60% of which are global. The high-stakes nature of our projects means we have to get this right.

For example, over the past seven years, we've worked to reorganize our IT services. We've developed IT partnerships that have enabled us to outsource commodity work and move some of it to low-cost locations. In the process, we have dramatically cut unit costs and improved service quality. But these were complicated projects involving dozens of high-stakes variables, personnel issues, varied cultures and difficult cross-company communications. We've seen each of the five problem areas come into play, and the single most important factor in helping ensure success has been communication. We established teams upfront to set clear expectations with leadership, team members, and our partner companies and their employees. And then we worked diligently to ensure that when-ever expectations changed, were not or were not met, we communicated that to all involved.

We put in place core people, backed by rewards and requirements, to ensure that we discussed issues head-on and quickly. And we shared data — good and bad — as soon as possible. The team members learned to work through issues together, trust one another and learn from one another. These relationships remain strong and are delivering results beyond expectations.

Conversations Count

We learned that project failure can be predicted with surprising reliability. That's because the problems requiring the five crucial conversations are widely perceived yet rarely discussed. The best predictor of project success is the quality of these conversations.

Silence exists in organizations because people fear it's not safe to speak up about the problems they see. They shy away from discussions about behavior, expectations or performance because they are afraid of a negative outcome — like making an enemy, enduring a miserable argument or getting canned.

At P&G, we understand that having these five conversations — addressing these human factors — is crucial to the success of our cross-functional initiatives. And based on these findings, we are enhancing our development program for project managers to include early assessment and communication of these key issues. We're also educating senior managers on their role in creating an organizational culture that encourages project managers and team members to "break the silence" and engage in these crucial conversations. ▽

A 31-year Procter & Gamble veteran, Scott is vice president of information and decision solutions. Contact him at scott.rd.hjppg.com.

CRUCIAL CONVERSATIONS

The "Silence Falls" study (www.silencefalls.com) outlined five key problems in IT projects and five crucial conversations to combat the silence that can lead to failure.

PROBLEM 1 is AMPL. Sponsors: 65% of project leaders work regularly with sponsors who fail to give the required support, leaving projects stranded and exposed.

in Conversations: Project sponsors must communicate, providing leadership and political support.

PROBLEM 2 is Fast-free planning: 65% of project leaders are given parameters such as deliverables, budgets and timelines with no opportunity for input.

in Conversations: Project leaders must be involved in the overall scope of planning.

PROBLEM 3 is Shifting: 65% of project leaders say their effectiveness is undermined by powerful stakeholders and managers who attempt to shift decision-making, planning and prioritization processes.

in Conversations: Project managers have to stand up and maintain project discipline.

PROBLEM 4 is Missing goals: 50% or more of project managers say team members regularly fail to honestly report project risks. As a result, the team loses opportunities to respond with revised goals, shifted resources or reorganized plans.

in Conversations: Team members must be encouraged to speak up.

PROBLEM 5 is Team failure: 50% of project leaders are lobbied by direct reports who don't show up to meetings or fail to meet schedules or goals.

in Conversations: Project leaders must insist on packing their teams, and they must confront inadequate performance.

— ROBERT SCOTT



Seeing what employees and visitors really had on their laptops, Bert was glad he'd gotten Juniper's Unified Access Control solution.

>> Employees and guests bringing in more than business? Protect your network – and give appropriate access – all with Juniper's Unified Access Control v2.0.

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Nobody's Perfect

The best IT leaders know it and build around their weaknesses.

Q&A

The "myth of the complete leader" goods some managers into a futile effort to be all things to all people. The result can be damaging to the person and the organization, says **Deborah Ancora**, professor of management at the MIT Sloan School of Management and faculty director of the MIT Leadership Center. In this month's Harvard Business Review, Ancora and co-authors Thomas W. Malone, Wanda J. Orlikowski and Peter M. Senge praise the "incomplete leader." Ancora talked with Kathleen Melymuk about how to make peace with your shortcomings and build balance in your organization.

Why is the complete leader a myth? First of all, no one is omniscient and flawless. No leader can do it all. Furthermore, in this age of very complex problems where information and expertise are very dispersed and change happens very fast, no one can do it alone. You need to rely on other people.

Why is the myth harmful? For several reasons: Trying to do everything can lead to burnout. Trying to live up to some ideal often traps leaders behind a mask of competence, afraid to admit to confusion or to not knowing the answers. But if they don't get input, they can go off course. It can also be harmful because if everybody thinks the leader has all the answers, people don't think for themselves and learn to lead.

You see leadership as a framework of four capabilities. The first is "sensemaking." What's that? Understanding the context in which you are operating. In the IT world, you need to make sense of cutting-edge technology and also what's going on in the business units and at



MIT's DEBORAH ANCORA praises "incomplete leaders" who build teams with skills that complement their own.

the strategic level, because you want to mesh what you're doing with the business world. You need to understand the culture of the organization in which you are working — what's going on within and outside.

Can you give me an example of someone who's good at sensemaking? Andy Grove, former CEO of Intel. He actually wrote a book about really being aware of the external context in which you're operating. Being aware of strategic inflection points — those times when the external environment was going to change

radically. He set up the company to monitor conditions that give you cues about radical change.

The next capability is "relating." What's that all about? It's about building solid relationships within and across organizations. In IT, you need to have good relationships with other parts of IT, with the business units, with people outside so you know the latest trends in technology and what other organizations and the competition are doing.

Who's good at relating? Former CEO Herb Kelleher at Southwest Airlines. He once said, "We're not afraid to tell our people we love them, because we do." That may sound corny, but they really believe that. It goes on throughout Southwest.

The third capability is "visioning." Why is that so important? First, it helps to focus an organization's activity. If you know what you're moving toward, you also know what you're not [supposed to be] doing. It also gives people a sense of meaning and excitement about work. It's the switch that provides light and energy.

Can you name a good visionary? The two most famous would be Steve Jobs, who just knows how to frame what he's saying; The Macintosh wasn't about building one more computer but about changing the world. The other is Martin Luther King Jr.: "I have a dream."

What are some of the keys to successfully creating a vision? Part of it is where you start. You need to start with something that really excites you, because excitement is catching. When you feel passionate, people know it, and it transfers. You also have to tap into the desires and values of others. If you're too far off the mark — too far from a dominant cultural value — that can get you in trouble. You need to paint a picture or create a phrase that captures what is possible for the future.

The last capability is "innovating." What's that? Creating new processes and structures to get to the vision. If you're going in a new direction, it may be that the way you're organized is not sufficient, so you need to create a new way.

Who's good at innovating? Meg Whitman is an example. The invention that went on at eBay is quite astounding. She invented a way around each problem.

I'm not likely to be equally good at all four capabilities, so as an "incomplete leader," what do I do next? Make sure you know what your strengths are and find out where you can't do so you can find people to work with who complement your skills. Don't surround yourself only with people like you. You need to create balance. ■

Know

You may be weak in SENSEMAKING if you...

- Feel that you are usually right and others are usually wrong.
- Are often blindsided by changes in your organization.
- Resist change.

You may be weak in RELATING if you...

- Feel that others constantly let you down.
- Find many of your interactions unpleasant.
- Think that many colleagues are untrustworthy.

You may be weak in VISIONING if you...

- See work as an endless series of crises.
- Have no sense of larger purpose at work.
- Think what you're doing may not really matter.

You may be weak in INVENTING if you...

- Find your organization's vision abstract.
- Feel that what you are doing doesn't relate to your company's vision.
- Feel that things tend to revert to business as usual.



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Another Impetus For IP Protection

A virus infection points up the dangers of making it all too easy for visitors to get on the company network. By Mathias Thurman

A VIRUS INCIDENT this week caused me a bit of anxiety about my last big undertaking. But once the infection was under control, it got me thinking about a pending project and the need to get it funded.

My anxiety arose from the timing of the incident. On Monday, we had 65 desktops infected with a variant of a well-known virus. Monday was the first workday after Friday evening, which is when we had installed a Multiprotocol Label Switching (MPLS) network circuit between our company's corporate network and the 200-person remote office of a company that we recently acquired.

The reason my jaw dropped to the floor upon learning about this incident was that I had authorized the MPLS connection. If an infected desktop at the acquired company was the source of this propagation of malicious code, it wouldn't be good for me. Prior to the authorization, I had completed a security assessment, and one of its main purposes was to ensure that after connecting our two offices, we wouldn't become infected by a virus lurking within the acquired company's network. Naturally, I couldn't help but see direct cause and effect in this situation.

Fortunately, the infection was pure coincidence, and we quickly quarantined the infestation. I have a really good incident response process in place to deal with viruses and worms. We were able to conduct some forensics on the

virus and then send that information to Trend Micro, which in turn created an interim detection and removal tool for us. The tool was quickly installed on the infected desktops, and we were able to stop the propagation. As standard practice, we also blocked the ability of this variant to communicate with an external Web site by putting the URL on our Web caching gateways, thus preventing any infected resources from trying to "call home."

So, if the MPLS circuit wasn't to blame, what was? The source, we think, was a vendor's laptop. That's the problem I'm going to need more funds to address. And the problem isn't just that rogue laptops can introduce viruses. The problem is that our network is very flat, and visitors who connect to it will find little to stop them from accessing our intellectual property.

We have a policy banning vendor representatives from connecting to our network. But the ban is regularly violated, and until I can get the company to invest in Cisco's Network Admission Control or a similar technology, rogue laptops will continue to be a risk. Eventually, when the network team completes the upgrade of our network, I'll be able to mandate segmentation, with our internal desktop network clearly separated

from public areas like conference rooms, which should be authorized for limited Internet access only.

I've brought this to the attention of our network manager, who has assured me that the right thing will be done once the routers and switches have been upgraded to accommodate proper network segmentation.

But protecting our intellectual property is a great concern for my company, and I'm always looking for the best ways to do it. We have plenty of brochures, intranet pages and training available aimed at educating our employees on the importance of IP protection. However, those things can take us only so far. There must be a technology complement, and I frequently propose various approaches to the company's division and business unit owners. Though they share my concerns, it all boils down to funding. As is typical with semi-conductor companies, my employer is very tight with IT spending.

SO Obvious

One way around that might be to focus on strategic objectives. My company uses SOs to drive bonus plans and set priorities for initiatives. I've noticed that after executives sign off on an SO, it often becomes easier to get funding for things that will help satisfy the SO. And I know that one of our main product divisions — and by far the most profitable — has an SO that's completely focused on the threat of critical design documents and source code leaving the company.

I regularly meet with this group, and I have proposed deploying digital rights management and a content monitor. Right now, I'm putting together my initial production

rollout of Microsoft's Rights Management Services (RMS). Although this technology can be incorporated in most Microsoft Office applications and Exchange e-mail, it is limited. It can't protect Adobe PDFs or the applications we use to create design documents and source code. To address those shortcomings, I might consider laying another technology on top of RMS to provide additional functionality. I've been looking at enterprise rights management from Waltham, Mass.-based Liquid Machines to satisfy this requirement.

As for content monitors, they would notify us or take other appropriate action when data that has been identified as sensitive — whether documents, source code or anything containing keywords that we define — is in transit on the network. With content-monitoring tools from any of the major players, including Reconex, Tabbus and Vontu, a centralized management console is used to "register" data into the system, and the sensors watch for either the entire document, parts of it or any network traffic containing certain keywords.

My goal is to leverage the needs of this particular division to satisfy the IP protection needs of the entire company. If I can place sensors at all of our Internet egress points, then I will have the luxury of watching all of our network traffic. And I will be able to use the content-monitoring technology to look for any manner of sensitive information leaving the company, including financial results, strategic plans, legal documentation and human resources data. I'll keep my fingers crossed and hope that this SO will benefit the rest of my company. ■

WHAT DO YOU THINK?

The week's journal is written by a real security manager. Mathias Thurman, whose name and employer have been disguised for obvious reasons. Contact him at mthurman@humanix.com, or post the discussion in our security blog: computerworld.com/blog/security. To find a complete archive of our Security Manager's Journal, go online to computerworld.com/blog/journal.

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EVENTS

Manufacturing

Feb. 12-15, Orlando

Sponsor: Air Advisory Group Inc. Collaborative Manufacturing Strategies Driving Performance in the Flat World includes sessions on benchmarking for continuous improvement, the risks and rewards of emerging global markets, winning strategies for the flat world, gaining competitive advantage with manufacturing execution systems, best practices for meeting government regulations, on-terprise interoperability and wireless networks. www.aircwb.com

Health Care

Feb. 25-March 1, New Orleans

Sponsor: HIMSS

HIMSS07, the Annual Conference and Exhibition of the Healthcare Information and Management Systems Society includes a CD forum as well as training and symposia on topics such as clinical engineering, nursing informatics and quality. There are also special sessions on IT for pharmacists and physicians. www.himss.org

Human Resources

Feb. 28-March 1, San Diego

Sponsor: The Conference Board Inc.

Strategic e-HR: Maximizing the Value of HR Through technology addresses topics such as maximizing your return on technology in HR, making the case for e-HR, implementing portals, using technology to facilitate succession planning, and using technology for e-recruiting and talent management.

www.conference-board.org

Business Intelligence

March 12-14, Chicago

Sponsor: Gartner Inc.

Driving Business Performance With Business Intelligence includes tracks on business applications, technology and architecture, and IT management. Presentation topics include analytics and integrating business insight with business processes, data integration for strategic business intelligence, approaches to supporting data quality, the mission critical data warehouse, supply chain management and BI convergence, the future of database management systems and how to define the right metrics for performance management. www.gartner.com

PAUL GLEN

Why Managers Fail

WHEN I first joined the workforce, I naively believed that workers supported their bosses, looked up to them, followed their directives and sought out their counsel. I also assumed that bosses were generally deserving of respect, since they had been promoted by the sages who went before them. These were the days before Dilbert alerted the precariously young about the messy realities of the workforce.

Of course, it's easy to lose the confidence and support of subordinates, and, sadly, there are many managers who are deserving of disrespect and derision. One of the reasons why the "Dilbert" comic strip is so funny is that we've all had incompetent and arrogant bosses. There are endless ways for managers to lose the respect of their subordinates, and most do.

Over the years, I've heard explanations for this pervasive failure of leadership that lead into two general schools of thought:

1. **Defective people get promoted into management.** There are many subtle variations on this theme, but the key idea is that people eventually get promoted to jobs in which they are incompetent. Their unsuitability may be either technical or emotional, but either way, they enter their new position defective and are unable to adapt to the demands of the new job. In fact, it may be their defects that lead them to want those jobs in the first place.

2. **The position of management, by its nature, corrupts the competence of those who hold the job.** In this narrative, people enter management in a generally capable state, but eventually they succumb to the temptations of money, power, ambition and hubris. The position of management is itself toxic to those who would dare occupy it.



PAUL GLEN is the founder of TheGoodLeaders.com. Web community and the author of the award-winning book *Leading Great: How to Manage and Lead People Who Differ* (Technology Library Press, 2003). Contact him at info@paulglen.com.

Both explanations make good points, and I'm sure that many managers do fail for these reasons. Still, I get to meet a lot of managers, and most of them are neither incompetent books nor power-hungry tyrants. Most really want to do what's best for their organizations and staffs.

So I'm not convinced that either of these stories adequately explains why so many people feel that their managers really stink at their jobs. It seems to me that the most common reasons are more banal and less dramatic. In fact, I

think that most managers don't really fail flat at their jobs at all. Most managers perform most of the tasks of leadership with reasonable competence.

They generally seem able to carry out their responsibilities. They generally display professionalism and comport themselves appropriately. What seems to go wrong is that each person has some shortcoming in some area — one foible that everyone notices and no one forgives. They don't really fail at their jobs. They fail at one aspect of their job, each one falling short in some idiosyncratic way.

And once this unforgivable something is recognized and generally ac-

knowledgeed by the staff, the manager is considered damaged goods — imperfect and unacceptable. From that moment on, the manager is no longer a competent person striving to do the best he can; he is instantly transformed into a caricature of failure. Everything he does going forward is tainted with the verdict of no confidence. And the trust and confidence of the staff, once lost, is nearly impossible to recapture.

Surely there are people who enter management damaged or are damaged by the experience, but to me, what seems most broken is our expectations of managers. Our managers fail because we believe that unless they are nearly perfect, they are failures. Few can live up to expectations of perfection or sustain the ongoing illusion that they live up to expectations.

And since those same staffers who disdained their managers eventually fill management positions, they bring their unrealistic expectations with them into the job, perpetuating the cycle of cynicism and failure. New managers feel compelled to project an air of infallibility, but at the same time, they feel inadequate to the task and incapable of meeting the expectations of their subordinates. This fear and posturing lead their staffs to write them off, just as they wrote off their past managers.

So maybe the reason why so many managers seem so bad is that we judge

them so harshly. This should not serve as an excuse for managers to fail to grow, improve their skills and learn from their mistakes. But if we humanize our conception of management and managers, perhaps we'll notice that flawed people can be

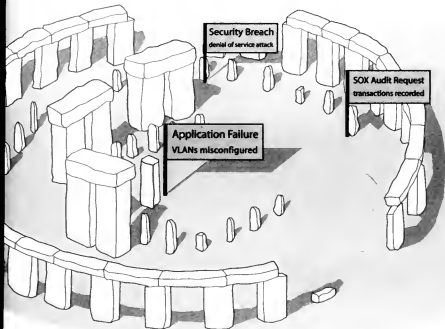
adequate or perhaps good managers, even with their sometimes annoying, sometimes amusing shortcomings. ■

New managers feel compelled to project an air of infallibility, but at the same time, they feel inadequate to the task.

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FRANK HAYES ■ FRANKLY SPEAKING

Passwords—Why?

AT THE RSA conference this week, smart card vendor Gemalto will be showing a new product: a device the size of a thumb drive that plugs into a USB port and automatically authenticates a user at multiple Web sites. What a great idea, I thought when I heard about it. No special readers, no biometric jiggy-pokery, no flashing numbers for users to copy from a pocket token — just a familiar device for users to plug into a PC. Why didn't somebody think of this before?

Turns out somebody did. Several somebodies, actually, including RSA Security, Aladdin Knowledge Systems and even SanDisk. In fact, the USB security dongle has been on the market since 2003.

Which leads to a new question: Why aren't we using this already?

After all, we know we need better security than password gives us. We know about the threats from phishing and keylogging. We see the headlines about hacked databases and customer records stolen by the millions. We know our users pick passwords that are easy to remember (and guess) or write them down, or both — and then forget them anyway, so we're constantly doing password resets.

And here's an alternative, one that's simple to use and familiar to users and costs about the same as a password reset. So why are IT shops still fumbling with the chunky, outdated, expensive and weak security of passwords?

Well... we know why, don't we?

We know password. We've always used them. Our users have always used them. They're far more familiar and ubiquitous than even USB thumb drives.

We know what to do when users forget their passwords. Password resets are the lion's share of what most help desks do; they're fast, they're easy, and they make our trouble-ticket completion statistics look good. And we can do them remotely — we can get a remote user back online in minutes, which isn't possible if a user loses a USB dongle.

We know each password reset costs about \$20, but that's a soft cost built into the help desk budget. It's invisible. The price of replacing a lost dongle is unavoidably visible, and we have no way of knowing how many we'll lose. It's an unpredictable, uncontrollable capital cost.

We know that C-level management doesn't have to be sold on passwords. And we know how it would look if

we pitched a fancy-shmancy USB key as a replacement for the venerable password: We'd look like a bunch of gadget freaks who just want new little toys to play with.

Yes, we know password are weak. We know they're costly and hard to use. We know they fail. But they're the devil we know. And no matter how much better USB security dongles might be, the inertia of familiarity is tough to overcome.

Maybe it's time to try anyway.

Face it, passwords really are past their time. The risks really are rising. The technology of these hardware authentication keys is no longer geek stuff, and the benefits and costs line up.

Sure, we'll have to teach users to treat USB dongles like their car keys. We can handle that. So can they.

We'll have to develop new procedures for when dongles get lost and work out the logistics of temporary password-only access. And yes, we'll have to build a steady trickle of dongles disappearing until business managers start taking those losses seriously.



Frank Hayes, Computerworld's senior content editor, has covered IT for more than 20 years. Contact him at frankh@computerworld.com.

But we need better security, and we need it soon. In the face of phishing and keyloggers, intruders and data thieves, we can no longer afford passwords.

And as nasty a job as it will be to convince upper management of the value of USB security keys, we know how much nastier things will get if we're hit by even a single high-profile security breach.

And we know what those big bosses will be asking when security breaks down:

Why weren't we using something better already? ■

Just One Bad Idea After Another

IT manager pilot fish at a hospital gets a call from a user at a remote clinic who says their network has gone dead, so he heads off to investigate the outage. "We traced a cable going through a wall," grumbles fish. "No plans, of course. The other side of the wall was several feet away — with no cable. It was the building's elevator shaft, and we realized that the cable was broken inside. Opening the doors while the elevator was at another floor revealed two loose ends of Cat 5 cable. I guess someone thought the elevator shaft would be a good way to go from floor to floor, but the moving elevator had other ideas."

Bright Guy

User calls help desk pilot fish to report that this printer in the

SHARK TANK

next to the system via Telnet," says a pilot fish helping out.

handy has no power. Is it turned on and plugged in? fish asks. User tells him, "The switch is on, but I can't see if the cord is plugged in."

When fish arrives to investigate, it's clear why: All the lights are out, and two maintenance guys with a flashlight

are looking for a loose fuse in the power panel. Maybe the lights all being out would indicate why the printer doesn't have power, fish tells user. "Yikes," says user.

"I figured it just came unplugged, but it was too dark to see, and the maintenance guys wouldn't let me borrow the flashlight."

Numbers Game

It's the mid-1990s, and this proprietary mini-computer is being upgraded to one that uses a TCP/IP network. "Not being used to TCP/IP," the operators asked us to test the ability to con-

nect to the system via Telnet," says a pilot fish helping out.

fish can't log in. One hour and many support calls later, fish finally talks to a vendor support guy who asks what type of terminal emulation he's using. "When I told him, he informed me that emulation was not supported," says fish. "I told him that according to this vendor's own Telnet documentation, it was. He asked what version of the documentation I was using. I said, 'Version 2.' He said, 'Oh, I will have Version 3.'"

N Won't Help

E-mail from central IT to user of a remote site: "We'd like to move your user mail server to a newer software version, but it will have to be over a weekend. You won't have access to e-mail while the server is in transit." User:

"Can't we put a virtual user in the server while it's in transit?"

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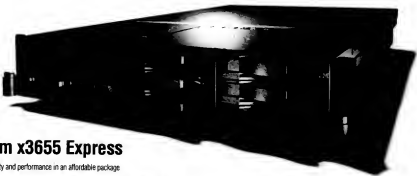
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